

**REMARKS**

Claims 1-12 are rejected under 35 U.S.C. 103(a), as being unpatentable over U.S Patent No. 6,503,835 to Lee in view of EP 1186685 A2 to Xu et al. Claims 13-19 are rejected under 35 U.S.C. 103(a), as being unpatentable over U.S Patent No. 6,503,835 to Lee in view of EP 1186685 A2 to Xu et al.

**10 1. Objection to claims 2 and 7:**

Claim 2 recites the term, "the second side." However, there is insufficient antecedent basis for this term in the claim. The Examiner is relying on the original Claim 1 to interpret this term.

**15**

Claim 7 depends from claim 21. The Examiner is interpreting this to be a typographical error of "claim 2". Appropriate correction is required.

**20 Response:**

Claim 21 is introduced in reply to the Office action dated on 04/03/2003, and the term "a second side" is recited in the claim 21. Accordingly, the claim 2 is amended to be dependent upon the claim 21, and the claim 25 7 is amended to be dependent on the claim 2, as specified in the above AMENDMENT section. A quick allowance of the present application is respectfully requested.

**2. Rejection over claims 1, 9-12, 14-18, and 21 under 30 35 U.S.C. 102(b):**

In regards to claims 1 and 9, the Examiner refers to reference numerals of Nagano's figure 1 as shown

below. Nagano discloses in figure a, an electrode structure of a plasma display panel with a first sustaining electrode (12) and a second sustaining electrode (12') set on the surface of the front substrate (1), and a first gap (shown below) existing between the first and second sustaining electrodes; a first auxiliary electrode ( $X_n$ ) electrically connected to the first sustaining electrode, the first auxiliary electrode comprising a first part (11) and a second part (13) adjacent to the first part, the first part formed in the first gap and the second part located above the first sustaining electrode; wherein a second gap (shown below) existing between the first part of the first auxiliary electrode and the second sustaining electrode, and the width of the second gap is smaller than the width of the first gap.

The Examiner notes that the discharge gap of Nagano exists between the two discharge electrodes,  $X_n$  and  $Y_n$ .  
20 Because the second auxiliary electrode (11') is electrically connected to the second sustaining electrode (12'), an electrical discharge will occur in the second gap.

25 In regards to claim 10, Nagano discloses all of the recited limitations of claim 9 (above).

Nagano further discloses that the first sustaining electrode comprises a first side approaching to the second sustaining electrode and a second side not contiguous to the end of the second sustaining electrode (12'), the first auxiliary electrode ( $X_n$ ) comprises a

first part (11) and a second part (13), the first part being formed in the first gap, and the second part is located approaching to the second side of the first sustaining electrode.

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In regards to claims 11-12, Nagano discloses all of the recited limitations of claim 10 (above).

Nagano further discloses that the first auxiliary 10 electrode is formed above the first sustaining electrode, and the second part of the first auxiliary electrode is formed on the surface of the front substrate.

15 In regards to claims 14-15, Nagano discloses all of the recited limitations of claim 9 (above).

Nagano further discloses that the structure of claim 9 further a third auxiliary electrode (11') located 20 in the first gap, and a third gap existing between the third auxiliary electrode and the first sustaining electrode, wherein the width of the third gap is smaller than the width of the first gap. Nagano further discloses that the first auxiliary electrode ( $X_n$ ) is electrically 25 connected to the first sustaining electrode (12), and the third auxiliary electrode ( $y_n$ ) is electrically connected to the second sustaining electrode (12').

30 In regards to claim 16, Nagano discloses all of the recited limitations of claim 9 (above).

Nagano further discloses that the first sustaining



electrode comprises a first side approaching to the second sustaining electrode and a second side not contiguous to the end of the second sustaining electrode, and the first auxiliary electrode is formed on the 5 surface of the front substrate and adjacent to the first side of the first sustaining electrode.

In regards to claim 17, Nagano discloses in figure 1, an electrode structure of a plasma display panel 10 with a first sustaining electrode (12) and a second sustaining electrode (12') set on the surface of the front substrate (1); a first auxiliary electrode (11) formed on the surface of the front substrate and parallel to the first sustaining electrode, a first gap existing 15 between the first sustaining electrode and the first auxiliary electrode; and a second auxiliary electrode (11') formed on the surface of the front substrate and parallel to the first sustaining electrode, a second gap existing between the first sustaining electrode and the second auxiliary electrode and being used as 20 a discharge gap of the electrode structure of the PDP, and the width of the second gap being smaller than the width of the first gap.

25 In regards to claim 18, Nagano discloses all of the recited limitations of claim 17 (above).

Nagano further discloses that the first sustaining electrode (12) comprises a first side approaching to 30 the second auxiliary electrode (12') and a second side not contiguous to the end of the second auxiliary electrode, and the electrode structure comprises a

third auxiliary electrode (13) adjacent to the second side of the first sustaining electrode.

In regards to claim 21, Nagano discloses all of the 5 recited limitations of claim 1 (above).

Nagano further discloses that the first sustaining electrode has a first side approaching to the second sustaining electrode (12') and a second side not 10 contiguous to the end of the second sustaining electrode.

**Response:**

First, the amended claim 1 is amended for more 15 consisting with the detailed description of the present application. No new matter is introduced.

Second, the Applicants intend to point out the difference between the amended claim 1 of the present 20 application and cited prior arts. The amended claim 1 of the present application is repeated below:

"1. An electrode structure of a plasma display panel (PDP), the electrode structure formed on a front 25 substrate of the PDP, and comprising:

· a first sustaining electrode and a second sustaining electrode set on the surface of the front substrate, and a first gap existing between the first and second sustaining electrodes; and  
30 · a first auxiliary electrode electrically connected to the first sustaining electrode, the first auxiliary electrode comprising a first part



and a second part in contact with the first part, the first part formed in the first gap, and the second part located above the first sustaining electrode;

5 wherein a second gap existing between the first part of the first auxiliary electrode and the second sustaining electrode is used as a discharge gap of the electrode structure of the PDP, and the width of the second gap is smaller than the width of the first gap."

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As disclosed in the amended claim 1 and Figs. 4D-4E, the present application provides an electrode structure mainly comprising two sustaining electrodes 34 and 36, and an auxiliary electrode. Specifically, as shown in 15 Figs. 4D-4E, the auxiliary electrode 40 includes a first part 40a formed on the surface of the front substrate 32, and a second part 40b in contact with the first part 40a and formed on the sustaining electrode 34. Additionally, a second gap 48 is defined between the 20 first part 40a of the auxiliary electrode 40 and the sustaining electrode 36, and the second gap 48 is used as a discharge gap of the electrode structure of the PDP to improve the image quality of the PDP (page 6, lines 11-15, & Figs. 4D-4E).

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However, Nagano discloses a plurality of pairs of discharge sustaining electrodes  $X_n$  and  $Y_n$ . The discharge sustaining electrodes  $X_n$  includes an opaque bus electrode  $x_n$  (11), and a discharge sustaining electrode 30  $x_n'$  comprising a transparent electrode 12 and an opaque bus electrode 13 formed on the transparent electrode 12 (Fig. 1 & col. 5, lines 35-40). Additionally, Nagano

further teaches that the discharge sustaining electrodes  $x_n$  (11) and  $x_n'$  are not always applied with the same voltage (col.3, line67, & col.4, lines 1-4), so that the discharge sustaining electrode  $x_n'$  is not connected to the discharge sustaining electrode  $x_n$  (11). According to the above discussion and Fig.1, the bus electrodes 11 ( $x_n$ ) and 13 of the discharge sustaining electrode  $X_n$  does not contiguously connect with each other. Nevertheless, the first part 40a of the auxiliary electrode 40 is in contact with the second part 40b in the present application. Therefore, the electrode structure disclosed in Nagano's disclosure should be definitely different from that taught in the amended claim 1 of the present application. Reconsideration of the amended claim 1 is hereby requested.

Furthermore, Nagano discloses that the discharge sustaining electrodes  $Y_n$  includes an opaque bus electrode  $y_n$  (11), and a discharge sustaining electrode  $y_n'$  comprising a transparent electrode 12 and an opaque bus electrode 13 formed on the transparent electrode 12 (col.5, lines 35-40). Nagano further discloses that a priming discharge is developed between the bus electrode  $x_n$  (11) and the bus electrode  $y_n$  (11) (col.6, lines 40-46, & Fig.1). As is known to those skilled in the art, a discharge gap is a space where a discharge starts initially, so that the discharge gap in Nagano's disclosure is located between the bus electrodes  $x_n$  (11) and  $y_n$  (11). Nevertheless, the discharge gap 48 of the present application is located between the auxiliary electrode 40 and the sustaining electrode 36, which is quite different from Nagano's teaching.



In this office action, the Examiner considers that the discharge gap is located between the bus electrode  $x_n$  (11) and the transparent electrode 12 of the discharge sustaining electrode  $y_n'$ . However, as shown in Nagano's Fig.1, the bus electrode  $y_n$  (11) is located between the bus electrode  $x_n$  (11) and the transparent electrode 12 of the discharge sustaining electrode  $y_n'$ , so that the priming discharge will start in the gap between the bus electrode  $x_n$  (11) and the bus electrode  $y_n$  (11), but does not start in the gap between the bus electrode  $x_n$  (11) and the transparent electrode 12 of the discharge sustaining electrode  $y_n'$ . Accordingly, the gap between the bus electrode  $x_n$  (11) and the transparent electrode 12 of the discharge sustaining electrode  $y_n'$  cannot be regarded as a discharge gap. Therefore, the discharge gap disclosed in Nagano's disclosure is absolutely different from that taught in the amended claim 1 of the present application. Reconsideration of the amended claim 1 is respectfully requested.

Likewise, as taught in the claim 9 and Figs. 4A-4C, the discharge gap 48 of the present application is located between the auxiliary electrode 44a and the sustaining electrode 36, and there does not exist any bus electrode between the auxiliary electrode 44a and the sustaining electrode 36. As discussed above, the discharge gap in Nagano's disclosure is located between the bus electrodes  $x_n$  and  $y_n$  (col. 6, lines 40-46, & Fig.1), so that the electrode structure disclosed in Nagano's disclosure should be definitely different from that taught in the claim 9 of the present application.



Reconsideration of the claim 9 is politely requested.

Moreover, as disclosed in the claim 17 and Figs. 5A-5B, an electrode structure mainly comprises a first sustaining electrode 64, a first auxiliary electrode 66, and a second auxiliary electrode 68. Additionally, a second gap 72 is defined between the first sustaining electrode 64 and the second auxiliary electrode 68, and the second gap 72 is used as a discharge gap of the electrode structure of the PDP. As discussed above, the discharge gap in Nagano's disclosure is located between the bus electrodes  $x_n$  and  $y_n$  (col. 6, lines 40-46, & Fig. 1), and a gap between the bus electrode  $x_n$  (11) and the transparent electrode 12 of the discharge sustaining electrode  $y_n'$  cannot be considered as a discharge gap. Accordingly, the electrode structure disclosed in Nagano's disclosure should be definitely different from that taught in the claim 17 of the present application. Reconsideration of the claim 17 is politely requested.

As claims 10-12 and 14-16 are dependent upon the claim 9, they should be allowed if the claim 9 is allowed. Additionally, the claims 18 and 21 are dependent upon the claim 17, so that it should be allowed if the claim 17 is allowed. Reconsideration of the claims 10-12, 14-16, 18, and 21 is hereby requested.

**3. Rejection over claims 2-8 and 13 under 35 U.S.C. 30 103(a):**

In regards to claims 2-4, Nagano discloses all of the recited limitations of claim 1 (above).

Nagano is silent to the first auxiliary electrode further comprising a third part.

5        However, Koshio teaches in figure 1 that the first auxiliary electrode further comprises a third part (shown below), which is located on the first sustaining electrode and approaches to the second side of the first sustaining electrode. Koshio further teaches in figure 10 that the third part of the first auxiliary electrode is located on the surface of the front substrate, and this configuration improves the fineness for a picture being displayed on the panel (column 2, lines 32-33).

15      Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to construct the electrode structure of Nagano, including the third part on the first auxiliary electrode which approaches the second side of the first sustaining electrode, since Koshio teaches this configuration improves the fineness for a picture being display on the panel.

25      In regards to claims 5-6, Nagano and Koshio teach all of the recited limitations of claim 2 (above).

30      Koshio further teaches in figures 2 and 10 that a back substrate (fig.10, 35b) parallel to the front substrate and a plurality of ribs formed on the back substrate and parallel to each other, and the plurality of ribs being perpendicular to the first auxiliary electrode. Koshio further teaches in figures 2 and 10

that the first auxiliary electrode further comprises a fourth part parallel to the ribs, and this configuration improves the fineness for a picture being displayed on the panel (column 2, lines 32-33).

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Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to construct the electrode structure of Nagano, including a plurality of ribs formed on the back substrate and parallel to each other, but perpendicular to the first auxiliary electrode, since Koshio teaches this configuration improves the fineness for a picture being display on the panel.

15 In regards to claims 7-8 and 13, Nagano and Koshio teach all of the recited limitations of claim 1 (above).

Nagano is silent to the second sustaining electrode comprises a third side.

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However, Koshio teaches in figure 2 that the second sustaining electrode comprises a third side ( $Y_b'$ ) not contiguous to the end of the first sustaining electrode, and the electrode structure also comprises a second auxiliary electrode ( $Y_a$ ) approaching to the third side of the second sustaining electrode. Koshio further teaches in column 7, lines 47-50 and 58-67 that the first and the second sustaining electrodes are defined and patterned by a first lithographic process, and the first auxiliary electrode is defined and patterned by a second lithographic process. And this configuration improves the fineness for a picture being displayed

B

on the panel (column 2, lines 32-33).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to construct the electrode structure of Nagano, including a third side on the second sustaining electrode which is not contiguous to the end of the first sustaining electrode, and the electrode structure also comprises a second auxiliary electrode (Y<sub>a</sub>) approaching to the third side of the second sustaining electrode, since Koshio teaches this configuration improves the fineness for a picture being display on the panel.

15 **Response:**

As claims 2-8 are dependent upon the amended claim 1, they should be allowed if the amended claim 1 is allowed. Additionally, the claim 13 is dependent upon the claim 9, so that it should be allowed if the claim 20 9 is allowed. Reconsideration of the claims 2-8 and 9 is hereby requested.

**4. Rejection over claim 19 under 35 U.S.C. 103(a):**

In regards to claims 19, Nagano discloses all of 25 the recited limitations of claim 18 (above).

Nagano is silent to a connecting electrode being formed between the first and the second auxiliary electrodes.

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However, Nagano does teaches in figure 1 that the auxiliary electrodes x<sub>a'</sub> and x<sub>a</sub> are arranged to form

a discharge electrode  $x_n$ , which indicates that  $x_n$  comprises a connecting electrode being formed between the first (13) and the second (11) auxiliary electrodes. Further, it would be a simple matter of design choice 5 of one skilled in the art to form the connecting electrode on the surface of the front substrate and perpendicular to the first auxiliary electrode since this structure is economical feasible.

10 Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to construct the electrode structure of Nagano, including connecting electrode on the surface of the front substrate and perpendicular to the first 15 auxiliary electrode, since one skilled in the art imply this structure from Nagano as an economical feasible structure.

**Response:**

20 Since the claim 19 is dependent upon the claim 17, it should be allowed if the claim 17 is allowed. Reconsideration of the claim 19 is hereby requested.

**5. Objection to claim 20:**

25 Claim 20 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

**30 Response:**

As the claim 20 is dependent upon the claim 17, it should be allowed if the claim 17 is allowed.



Reconsideration of the claim 20 is hereby requested.

Sincerely yours,

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